CLAIMS

The embodiments of the invention in which an exclusive property or right is claimed are defined as follows. Having thus described the invention what is claimed is:

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1. A method for signal-conditioning utilizing a signal-conditioning circuit, said method comprising the step of:

applying an offset correction voltage to a noninverting input of a signal-conditioning circuit;

applying a magnetoresistor half-bridge signal to an inverting input of said signal-conditioning circuit;

compensating a voltage at said noninverting input to drive an output voltage of said signal-conditioning circuit to an input voltage divided by a value of two by calibration, thereby permitting said signal-conditioning circuit to contain temperature compensation capabilities.

2. The method of claim 1 further comprising the step of:

configuring said signal-conditioning circuit to comprise an InSb signal-conditioning circuit.

3. The method of claim 1 further comprising the step of:

configuring said signal-conditioning circuit as a circuit comprising:

a noninverting signal input for application of offset correction voltages;

an inverting input for application of magnetoresistor half bridge signals; and

a temperature compensator.

4. The method of claim 1 further comprising the step of:

generating said magnetoresistor half-bridge signal utilizing at least one equivalent magnetoresistor configured within said signal-conditioning circuit.

5. The method of claim 1 further comprising the step of:

generating said magnetoresistor half-bridge signal utilizing a plurality of magnetoresistors configured within said signal-conditioning circuit.

6. The method of claim 1 further comprising the step of:

configuring said signal-conditioning circuit to comprise at least two magnetoresistors.

7. The method of claim 1 further comprising the step of:

configuring said signal-conditioning circuit to comprise a first magnetoresistor coupled to a second magnetoresistor at a first node, wherein said first magnetoresistor is coupled to a supply voltage and said second magnetoresistor is coupled to a ground.

8. The method of claim 7 further comprising the step of:

configuring said signal-conditioning circuit to comprise a first resistor coupled to a second resistor at a second node, wherein said first resistor is

coupled to said supply voltage and said second resistor is coupled to said ground, such that said second node is coupled to a positive input of said amplifier.

9. The method of claim 8 further comprising the step of:

configuring said signal-conditioning circuit to comprise a third resistor coupled to said first node and to a third node, wherein said third node is connected to a negative input of said amplifier.

10. The method of claim 9 further comprising the step of:

configuring said signal-conditioning circuit to comprise a fourth resistor coupled to said third node and to an output of said amplifier.

11. The method of claim 1 further comprising the step of:

configuring said signal-conditioning circuit to comprise at least one magnetoresistor in series with at least one resistor located in an inverting input of an amplifier associated with said signal-conditioning circuit;

wherein said at least one magnetoresistor comprises an InSb magnetoresistor that exhibits a negative scale factor temperature coefficient; and

wherein an associated magnet exhibits a negative scale factor temperature coefficient to thereby permit a gain of said amplifier to increase.

12. The method of claim 11 further comprising the step of:

configuring said at least one resistor to comprise a fixed low temperature coefficient resistor.

13. The method of claim 12 further comprising the step of:

choosing said fixed low temperature coefficient resistor to thereby obtain a flat resultant temperature coefficient thereof.

14. A method for signal-conditioning utilizing a signal-conditioning circuit, said method comprising the step of:

applying an offset correction voltage to a noninverting input of a signal-conditioning circuit;

applying a magnetoresistor half-bridge signal to an inverting input of said signal-conditioning circuit;

compensating a voltage at said noninverting input to drive an output voltage of said signal-conditioning circuit to an input voltage divided by a value of two by calibration thereof;

configuring said signal-conditioning circuit to comprise at least one magnetoresistor in series with at least one resistor located in an inverting input of an amplifier associated with said signal-conditioning circuit;

wherein said at least one magnetoresistor exhibits a negative scale factor temperature coefficient; and

wherein an associated magnet exhibits a negative scale factor temperature coefficient to thereby permit a gain of said amplifier to increase with temperature.

15. A system for signal-conditioning utilizing a signal-conditioning circuit, said system comprising:

an offset correction voltage applied to a noninverting input of a signal-conditioning circuit;

a magnetoresistor half-bridge signal applied to an inverting input of said signal-conditioning circuit; and

a voltage compensated at said noninverting input to drive an output voltage of said signal-conditioning circuit to an input voltage divided by a value of two by calibration.

16. The system of claim 15 wherein said signal-conditioning circuit comprises an InSb signal-conditioning circuit.

17. The system of claim 15 wherein said signal-conditioning circuit comprises:

a noninverting signal input for application of offset correction voltages;

an inverting input for application of magnetoresistor half bridge signals; and

a temperature compensator.

18. The system of claim 15 wherein said magnetoresistor half-bridge signal is generated utilizing at least one equivalent magnetoresistor configured within said signal-conditioning circuit.

19. The system of claim 15 wherein said magnetoresistor half-bridge signal is generated utilizing a plurality of magnetoresistors configured within said signal-conditioning circuit.

20. The system of claim 15 wherein said signal-conditioning circuit comprises at least two magnetoresistors.

21. The system of claim 15 wherein said signal-conditioning circuit comprises a first magnetoresistor coupled to a second magnetoresistor at a first node, wherein said first magnetoresistor is coupled to a supply voltage and said second magnetoresistor is coupled to a ground.

22. The system of claim 21 wherein said signal-conditioning circuit comprises a first resistor coupled to a second resistor at a second node, wherein said first resistor is coupled to said supply voltage and said second resistor is coupled to said ground, such that said second node is coupled to a positive input of said amplifier.

23. The method of claim 22 wherein said signal-conditioning circuit comprises a third resistor coupled to said first node and to a third node, wherein said third node is connected to a negative input of said amplifier.

24. The system of claim 23 wherein said signal-conditioning circuit comprises a fourth resistor coupled to said third node and to an output of said amplifier.

25. The system of claim 15 further comprising:

said signal-conditioning circuit comprising at least one magnetoresistor in series with at least one resistor located in an inverting input of an amplifier associated with said signal-conditioning circuit;

wherein said at least one magnetoresistor comprises an InSb that exhibits a negative scale factor temperature coefficient; and

wherein an associated magnet exhibits a negative scale factor

temperature coefficient to thereby permit a gain of said amplifier to increase with temperature.

26. The system of claim 25 wherein said at least one resistor comprises a fixed low temperature coefficient resistor.

27. The system of claim 26 wherein said fixed low temperature coefficient resistor is chosen to thereby obtain a flat resultant scale factor temperature coefficient thereof.

28. A system for signal-conditioning utilizing a signal-conditioning circuit, said system comprising:

an offset correction voltage applied to a noninverting input of a signal-conditioning circuit;

a magnetoresistor half-bridge signal applied to an inverting input of said signal-conditioning circuit;

a voltage compensated at said noninverting input to drive an output voltage of said signal-conditioning circuit to an input voltage divided by a value of two by calibration thereof;

said signal-conditioning circuit configured to comprise at least one magnetoresistor in series with at least one resistor located in an inverting input of an amplifier associated with said signal-conditioning circuit;

wherein said at least one magnetoresistor exhibits a negative scale factor temperature coefficient; and

wherein an associated magnet exhibits a negative scale factor temperature coefficient to thereby permit a gain of said amplifier to increase

with temperature.

29. An InSb signal-conditioning circuit, comprising:

a noninverting signal input for application of offset correction voltages;

an inverting input for application of magnetoresistor half-bridge signals; and

a temperature compensator.